

Merit-Aid and the Distribution of Entering Students at Ontario Universities*

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Merit-Based Entry Scholarship

- University guarantees scholarship of at least \$X to all applicants with grade point average (GPA) of Y or better
- Increases in both prevalence and value from 1994 to 2005

Why Merit Aid?

- Greater likelihood degree completion
- Higher govt. grant for honours students
- More affluent/influential alumni

- Concern that may redistribute financial aid from students of lower socioeconomic status (SES) to students of higher SES

Main Questions in Paper

- Impact of merit-based entry scholarships on university's overall share of high-GPA registrants?
- Does impact vary by neighbourhood SES?
- Is merit-aid of disproportionate benefit to students from high SES areas?

Literature

- No known studies of merit-based aid in Canada
- See paper for review of related Canadian literature and US merit aid literature

Our Student Data

- Ontario Universities Application Centre (OUAC)
- Applicants and registrants for Fall 1994-2005
- Ontario FT- HS student applying for FT admission to a degree program
- Omits: non-Ontario; PT; non-degree; and mature.
 - Only 3.1% of all registrants are omitted

OUAC Variables

- HS courses and grades (best 6 in final year)
- Universities and programs to which applied and preference ranking
- University and program, if any, at which registered that Fall
- Identity of postal code and HS

Census Data

- Neighbourhood characteristics from 2001 Census Dissemination Areas
- Linked to OUAC record by postal code
- Variable: high, middle or low income neighbourhood
 - Is average equivalent household income of the student's DA in the top, middle and bottom third of this distribution?

University Level Data

- Macleans Universities Survey
 - % budget spent on scholarships
 - % budget spent on student services
- Tuition
 - Statistics Canada Survey of Tuition and Living Costs
 - Council of Ontario Universities
 - University web sites and personal communications
- Guaranteed Entry Scholarships
 - OUAC
 - University web sites and personal communications

Tuition History

- Pre-1990s, little effective flexibility owing to 100% “clawback” applied to grants
- Some fee flexibility introduced in 1990s especially in professional programs
- Result
 - faster growth in tuition
 - still small differences among universities in arts and sciences

Scholarships

- Steady increases in % of budgets allocated to scholarships and bursaries at all universities
- 1994: 2 (10) universities (out of 19) had guaranteed aid to students with 80+ (90+)
- 2005: 13 (16) universities (out of 19) had guaranteed aid to students with 80+
- Such aid does not generally affect the level of aid available from govt. sources

Expectations

- Ontario is relatively closed system
 - 90+% of undergrads in Ontario universities are from Ontario
 - 90+% of Ontarians in university attend a university in Ontario
- Universities competing for same pool of academically strong students
- Universities and students are heterogeneous in qualities and interests

Expectations (contin)

- Merit aid is a “sticker price” strategy that should appeal more strongly to students from less affluent backgrounds
- Other strategies (class size, facilities, etc.) should appeal more strongly to students from more affluent backgrounds
- Merit aid should change mix of registering students accordingly

Figure 1

- Increase in tuition and fees (\$2001)
- Largest increases in level and diversity of values in deregulated professional programs - Commerce and Engineering

Figure 2

- “Net Cost” by program and grade range
- Net cost = tuition + fees – expected scholarship
- Expected scholarship: based on scholarship values and grade distribution of entering students by university
- General increases in both expected scholarship and net costs

Figure 2 (cont.)

- Increase in level of net cost is less than in tuition and fees
- Increase in dispersion of net cost is substantial in all programs and especially in 90-100 grade range

Table 1

- Col. 2: effect of double cohort (2003)
- Col. 3: stability in ratio of registrants to #19 year olds until 2002
- Cols. 4 and 5: evidence of grade inflation that appears to have started prior to double cohort
- Same patterns for applicants (not shown)

Table A-4

- Is merit-aid conferred disproportionately on students from high SES neighbourhoods?
- Low, Middle and High Income defined by 33rd and 67th percentiles of equivalent average neighbourhood income
- Top half of A-4 shows that university applicants and registrants clearly drawn from higher income neighbourhoods

Table A-4 (cont.)

- Bottom half of A-4 shows that distribution of 80+ and 90+ students by income tercile is similar to distribution of all students
- Key SES link is with the % of youth that apply and register at a university
- Key SES link is not with the GPA of those who do apply and register at a university

Table 2

- Distribution of student shares by university within grade and year categories
- Mean share = $(1 / \text{number of universities})$:
19 total and 13 or 14 for Engineering
- Engineering most concentrated
- Changes in rankings are common
- Large differences in values. Use logs in regressions

Regressions

- Results for registrants. Similar for applicants.
- 8 separate regressions by
 - Arts, Science, Commerce and Engineering
 - GPA level: 80-90 and 90-100
- Derivation of Dependent Variable:
 - Within each combination of program, GPA level and year, we categorize registrants by university (19 except Engin), income tercile (3) and distance from university (> 40 km or not).
 - 114 such cells each year (78 or 84 for Engineering)

Regressions (2)

- Dep Var: (Ln of) share of registrants in each of these 114 (or 78 or 84) cells
- 12 years of data. Hence each of the 8 (program and grade level) regressions has either 1368 or 966 observations.

Regressions (3)

- Independent Variables:
 - Relative Net Cost: (log of) net cost divided by provincial average net cost for that year, program and grade range.
 - Binary: high (low) income area, 40+ km to university, university-specific dummies (unreported), no year fixed effects
 - % of operating budget spent on scholarships and bursaries and % spent on student services – university figure from Maclean's

Regressions (4)

- Why not use Maclean's rankings?
 - No ranking across three categories and many strong students apply across categories, e.g., Laurier and McMaster. Kong and Veall use changes in rankings BUT students interested in level of costs rather than changes in costs
 - Univ fixed effects and Maclean's rankings are highly collinear
 - Our data justify treating U of T campuses separately and Maclean's does not

Regressions (5)

- Estimation Shortcomings:
 - Omitted variables – quality and diversity of programs, other aid, housing, etc.
 - Endogeneity – entry aid adopted or enriched due to declining share of academically strong students
 - Common in this literature and we have no obvious panacea

Tables 3 and 4 (1)

- Two specifications of each of the 8 regressions (by program and grade level)
- Odd numbered columns - simple with no interaction between net cost and income dummies
- Even numbered columns - interactions between net cost and income dummies

Tables 3 and 4 (2)

- Non-cost variables
 - Low income area – significantly negative
 - High income area – not significant
 - Residence >40 km – no consistent pattern
 - Proportions spent on scholarships and students services - usually positive but not significant

Tables 3 and 4 (3)

- Net cost coefficients without income interactions – odd numbered columns
 - 80-90 GPA – positive but not significant
 - 90-100 GPA - negative and significant
 - Elasticities generally modest: -0.08 to -0.13
 - Engineering: -0.86.

Tables 3 and 4 (4)

- Net cost coefficients with income interactions – even numbered columns
- Row 1: omitted category (middle income)
- Row 7: interaction coeff for low income
- Row 8: $(1 + 7)$ total effect for low income
- Row 9: interaction coeff for high income
- Row 10: $(1 + 9)$ total effect for high income
- Row 11: $(9 - 7)$ difference high versus low

Tables 3 and 4 (5)

- Generally negative interaction and total cost effect for low income areas
- Generally positive interaction and total cost effect for high low income areas
- Coefficient size and significance vary by GPA and program

Tables 3 and 4 (6)

- Most robust result
 - Significant positive difference between interaction coefficients for high and low income areas
 - Higher net cost associated with an increase in the ratio of students from high income areas to students from low income areas

Tables 3 and 4 (7)

- Why positive net cost effect for share from high income areas?
 - Limited control variables for level and allocation of university budgets
 - Universities with less merit-aid (high net costs) may be allocating more funds to uses that appeal to students from higher income areas - class size, program variety, non-academic services, etc.

Main Conclusions in Paper (1)

- Impact of net cost on university's overall share of high-GPA registrants?
- No indication of impact for 80-90 GPA
- Modest negative impact for 90+ GPA.
Larger for Engineering.

Main Conclusions in Paper (2)

- Net cost effect vary by area income?
 - Generally negative interaction and total cost effect for low income areas
 - Generally positive interaction and total cost effect for high low income areas
 - Coefficient size and significance vary by GPA and program
 - Higher net cost associated with an increase in the ratio of students from high income areas to students from low income areas

Main Conclusions in Paper (3)

- Merit-aid of disproportionate benefit to students from high SES areas?
- Key SES link is with the % of youth that apply and register at a university
- Key SES link is not with the GPA of those who do apply and register at a university
- Answer to above question is “no” conditional on university participation